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10/807,949	03/24/2004	Tong Zhang	200300641-1	4075
22879	7590	06/16/2009 HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400		
			EXAMINER	
			PERUNGAVOOR, SATHYANARAYA V	
			ART UNIT	PAPER NUMBER
			2624	
NOTIFICATION DATE		DELIVERY MODE		
06/16/2009		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/807,949	<b>Applicant(s)</b> ZHANG, TONG
	<b>Examiner</b> SATH V. PERUNGAVOOR	<b>Art Unit</b> 2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 02 April 2009.  
 2a) This action is FINAL.      2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 23-48 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 23-48 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Applicant(s) Response to Official Action***

[1] The response filed on April 2, 2009 has been entered and made of record.

### ***Response to Arguments***

[2] Presented arguments have been fully considered but are held unpersuasive. Examiner's response to the presented arguments follows below.

#### **Summary of Arguments**

Regarding claims 23 and 36 applicant argues:

1. Toklu does not teach
  - a. "arranges the candidate key-frames into a set of clusters" [Remarks: page 8, para. 3].
  - b. "selects one of the candidate key-frames from each cluster as a key-frame for the video" [Remarks: page 8, para. 3].
  - c. "a set of frame analyzers that obtain the series of video frames in parallel" [Remarks: page 9, para. 3].

Regarding claims 24, 27, 34, 37, 40 and 47 applicant argues:

1. There is no motivation to combine because
  - a. Image processing reduction is realized only when face detection is employed.  
[Remarks: page 12, para. 2].

- b. Human faces are not important features. [Remarks: page 12, para. 3]

Examiner's Response

Regarding claims 23 and 36 Examiner contends:

1. Toklu does teach:
  - a. "arranges the candidate key-frames into a set of clusters": Applicant is directed to 400 and 409 on fig. 4, where the key frames grouped according to corresponding segments represent a cluster.
  - b. "selects one of the candidate key-frames from each cluster as a key-frame for the video": Reference key frame is selected as the keyframe, see 407 on fig. 4.
  - c. "a set of frame analyzers that obtain the series of video frames in parallel": Multiple analyzers is utilized in parallel, see col. 6, ll. 9-10.

Regarding claims 24, 27, 34, 37, 40 and 47 Examiner contends:

1. There is motivation to combine because
  - a. Image processing reduction is realized even without face detection because corresponding video data is broken into two segments without image processing. See col. 5, ll. 55-60 of Toklu.
  - b. Human faces are important features. See para. 0005 of Wu.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

[3] Claims 23, 25, 26, 28-33, 36, 38, 39 and 41-46 are rejected under 35 U.S.C. 102(e) as being anticipated by Toklu et al. (“Toklu”) [US 6,549,643 B1].

Regarding claim 23, Toklu meets the claim limitations, as follows:

A key-frame extraction system [*fig. 1*], comprising: video frame extractor (*i.e. 12*) that extracts each of a series of video frames (*i.e. segments*) from a video [*fig. 1; col. 5, ll. 39-44*]; a set of frame analyzers (*i.e. 15, 16, 17*) that obtain the series of video frames in parallel from the video frame extractor (*i.e. 12*), each frame analyzer selecting a corresponding set of candidate key-frames from the series by performing a different corresponding analysis on each video frame in the series such that the analyses are selected to detect multiple types of meaningful content in the video [*fig. 1; col. 5, l. 61-col. 6, l. 7*]; key-frame selector (*i.e. 18*) that

obtains the corresponding candidate key-frames from each frame analyzer (*i.e. 15, 16, 17*) and arranges the candidate key-frames into a set of clusters (*i.e. segments*) and that selects one of the candidate key-frames (*i.e. reference key frame*) from each cluster (*i.e. segment*) as a key-frame for the video [*fig. 4; col. 13, ll. 60-66*].

Regarding claim 25, Toklu meets the claim limitations, as follows:

The key-frame extraction system of claim 23, wherein the key-frame selector (*i.e. 18*) selects the key-frames by determining an importance score (*i.e. object motion*) for each candidate key-frame in each cluster (*i.e. segment*) [*fig. 4; col. 13, ll. 60-66*].

Regarding claim 26, Toklu meets the claim limitations, as follows:

The key-frame extraction system of claim 25, wherein the key-frame selector (*i.e. 18*) determines the importance scores (*i.e. object motion*) by determining an image content (*i.e. region segmentation*) of each candidate key-frame [*fig. 4; col. 13, ll. 37-40*].

Regarding claim 28, Toklu meets the claim limitations, as follows:

The key-frame extraction system of claim 23, wherein the key-frame selector (*i.e. 18*) selects the key-frames by determining an image quality (*i.e. object motion*) for each candidate key-frame in each cluster (*i.e. segment*) [*fig. 4; col. 13, ll. 60-66*].

Regarding claim 29, Toklu meets the claim limitations, as follows:

The key-frame extraction system of claim 23, wherein the frame analyzers include a color histogram analyzer (*i.e. 17*) [fig. 1].

Regarding claim 30, Toklu meets the claim limitations, as follows:

The key-frame extraction system of claim 23, wherein the frame analyzers include a color layout (*i.e. distribution or histogram*) analyzer (*i.e. 17*) [fig. 1].

Regarding claim 31, Toklu meets the claim limitations, as follows:

The key-frame extraction system of claim 23, wherein the frame analyzers include a fast camera motion detector (*i.e. 15*) [fig. 1].

Regarding claim 32, Toklu meets the claim limitations, as follows:

The key-frame extraction system of claim 23, wherein the frame analyzers include a camera motion tracker (*i.e. 15*) [fig. 1].

Regarding claim 33, Toklu meets the claim limitations, as follows:

The key-frame extraction system of claim 23, wherein the frame analyzers include an object motion analyzer (*i.e. 15*) [fig. 1].

Regarding claims 36, 38, 39 and 41-46, all claimed limitations are set forth and rejected as per discussion for claims 23, 25, 26 and 28-33.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

[4] Claims 24, 27, 34, 37, 40 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toklu in view of Wu et al. ("Wu") [US 2003/0068087 A1].

Regarding claim 24, Toklu meets the claim limitations as set forth in claim 23.

Toklu does not explicitly disclose the following claim limitations:

The key-frame extraction system of claim 23, further comprising an audio event detector that obtains the series of video frames from the video frame extractor and that selects a corresponding set of candidate key-frames from the series by performing an audio analysis on each video frame in the series and that provides the corresponding set of candidate key-frames to the key-frame selector.

However, in the same field of endeavor Wu discloses the deficient claim limitations, as follows:

The key-frame extraction system of claim 23, further comprising an audio event detector (*i.e. 501*) that obtains the series of video frames from the video frame extractor (*i.e. 40*) and that selects a corresponding set of candidate key-frames (*i.e. frames with human sounds*) from the series by performing an audio analysis

on each video frame in the series and that provides the corresponding set of candidate key-frames (*i.e. frames with human sounds*) to the key-frame selector (*i.e. 503*) [paras. 0027 and 0041].

It would have been obvious to one with ordinary skill in the art at the time of invention to modify the teachings of Toklu with Wu to include audio analysis the motivation being to reduce the amount of image processing performed on the video data [para. 0026].

Regarding claim 27, Toklu meets the claim limitations as set forth in claim 25.

Toklu does not explicitly disclose the following claim limitations:

The key-frame extraction system of claim 25, wherein the key-frame selector determines the importance scores by determining an audio content of each candidate key-frame.

However, in the same field of endeavor Wu discloses the deficient claim limitations, as follows:

The key-frame extraction system of claim 25, wherein the key-frame selector (*i.e. 503*) determines the importance scores (*i.e. whether or not to process the frame*) by determining an audio content (*i.e. human sounds*) of each candidate key-frame [paras. 0027 and 0041].

It would have been obvious to one with ordinary skill in the art at the time of invention to modify the teachings of Toklu with Wu to include audio analysis the motivation being to reduce the amount of image processing performed on the video data [para. 0026].

Regarding claim 34, Toklu meets the claim limitations as set forth in claim 23.

Toklu does not explicitly disclose the following claim limitations:

The key-frame extraction system of claim 23, wherein the frame analyzers include a human face detector.

However, in the same field of endeavor Wu discloses the deficient claim limitations, as follows:

The key-frame extraction system of claim 23, wherein the frame analyzers include a human face detector (*i.e. 503*) [*para. 0031*].

It would have been obvious to one with ordinary skill in the art at the time of invention to modify the teachings of Toklu with Wu to include face detection the motivation being human faces are most important users of video content [*para. 0005*].

Regarding claims 37, 40 and 47, all claimed limitations are set forth and rejected as per discussion for claims 24, 27 and 34.

[5] Claims 35 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toklu in view of Dimitrova et al. (“Dimitrova”) [US 6,125,229].

Regarding claim 35, Toklu meets the claim limitations as set forth in claim 23.

Toklu does not explicitly disclose the following claim limitations:

The key-frame extraction system of claim 23, further comprising a user interface for displaying a set of video frames in the video previous to each key-frame and a

set of video frames in the video subsequent to each key-frame and for obtaining a user selection of one or more of the video frames

However, in the same field of endeavor Dimitrova discloses the deficient claim limitations, as follows:

The key-frame extraction system of claim 23, further comprising a user interface for displaying a set of video frames in the video previous to each key-frame and a set of video frames in the video subsequent to each key-frame and for obtaining a user selection of one or more of the video frames [*col. 12, ll. 59-67*]

It would have been obvious to one with ordinary skill in the art at the time of invention to modify the teachings of Toklu with Dimitrova and include user input the reasoning being that user's desire should be taken into account.

Regarding claim 48, all claimed limitations are set forth and rejected as per discussion for claim 35.

### ***Conclusion***

[6] **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Contact Information***

[7] Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. Sath V. Perungavoor whose telephone number is (571) 272-7455. The examiner can normally be reached on Monday to Friday from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Matthew C. Bella whose telephone number is (571) 272-7778, can be reached on Monday to Friday from 9:00am to 5:00pm. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dated: June 12, 2009

*/Matthew C. Bella/  
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